

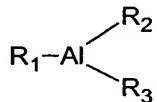
WHAT IS CLAIMED IS:

1. A syringe which is comprised of a barrel having a fluid chamber, a proximal end, a distal end and an
5 elongated tip extending from said distal end having a passageway therethrough in fluid communication with said chamber, and an elongated plunger rod including a stopper slidably positioned in fluid-tight engagement with an inside surface of said chamber for drawing fluid into and
10 out of said chamber by movement of said plunger relative to said barrel, wherein the stopper is comprised of neodymium polyisoprene rubber.

2. A syringe as specified in claim 1 wherein the
15 stopper has ribs.

3. A syringe as specified in claim 2 wherein the neodymium polyisoprene rubber is made with a catalyst system that includes (1) an organoaluminum compound, (2) an
20 organoneodymium compound, and (3) at least one compound that contains at least one labile halide ion.

4. A syringe as specification in claim 3 wherein the organoaluminum compound is of the structural formula:
25



wherein R_1 is selected from the group consisting of alkyl,
30 alkoxy, aryl, alkaryl, arylalkyl radicals and hydrogen, wherein R_2 is selected from the group consisting of alkyl, aryl, alkaryl, arylalkyl radicals and hydrogen, and wherein R_3 is selected from a group consisting of alkyl, aryl,

alkaryl and arylalkyl radicals.

5. A syringe as specified in claim 3 wherein the organoaluminum compound is selected from the group consisting of trimethylaluminum, triethylaluminum, tri-n-propylaluminum, triisopropylaluminum, tri-n-propylaluminum, triisopropylaluminim, tri-n-butylaluminum, triisobutylaluminum, tripentylaluminum, trihexylaluminum, tricyclohexylaluminum, trioctylaluminum, triphenylaluminum, 10 tri-p-tolylaluminum, tribenzylaluminum, ethyldiphenylaluminum, ethyl-di-p-tolylaluminum, ethyldibenzylaluminum, diethylphenylaluminum, diethyl-p-tolylaluminum, and diethylbenzylaluminum.
- 15 6. A syringe as specified in claim 3 wherein the organoneodymium compound is of the formula NdL_3 wherein Nd represents neodymium and L is an organic ligand selected from a group consisting of (1) o-hydroxyaldehydes, (2) o-hydroxyphenones, (3) aminophenols, (4) hydroxy esters, (5) 20 hydroxy quinolines, (6) beta-diketones, (7) monocarboxylic acids, (8) ortho dihydric phenols, (9) alkylene glycols, (10) dicarboxylic acids, (11) alkylated derivatives of dicarboxylic acids, and (12) phenolic ethers.
- 25 7. A syringe as specified in claim 3 wherein the organoneodymium compound is of the formula NdL_3 wherein L represents an organic ligand containing from 1 to 20 carbon atoms.
- 30 8. A syringe as specified in claim 3 wherein the organoneodymium is neodymium naphthenate.

9. A syringe as specified in claim 3 wherein the

organoneodymium is neodymium neodecanoate.

10. A syringe as specified in claim 3 wherein the organoneodymium is neodymium octanoate.

5

11. A syringe as specified in claim 3 wherein the compound that contains at least one labile halide ion is selected from the group consisting of inorganic halide acids, organometallic halides, and inorganic halides.

10

12. A syringe as specified in claim 11 wherein the compound that contains at least one labile halide ion is an inorganic halide acid selected from the group consisting of hydrogen bromide, hydrogen chloride, and hydrogen iodide.

15

13. A syringe as specified in claim 11 wherein the compound that contains at least one labile halide ion is an organometallic halide selected from the group consisting of ethylmagnesium bromide, butylmagnesium bromide,

20 phenylmagnesium bromide, methylmagnesium chloride, butylmagnesium chloride, ethylmagnesium iodide, phenylmagnesium iodide, diethylaluminum bromide, diisobutylaluminum bromide, methylaluminum sesquibromide, diethylaluminum chloride, ethylaluminum dichloride,

25 ethylaluminum sesquichloride, diisobutylaluminum chloride, isobutylaluminum dichloride, dihexylaluminum chloride, cyclohexylaluminum dichloride, phenylaluminum dichloride, didodecylaluminum chloride, diethylaluminum fluoride, dibutylaluminum fluoride, diethylaluminum iodide,

30 dibutylaluminum iodide, phenylaluminum diiodide, trimethyltin bromide, triethyltin chloride, dibutyltin dichloride, butyltin trichloride, diphenyltin dichloride, and tributyltin iodide.

14. A syringe as specified in claim 11 wherein the compound that contains at least one labile halide ion is an inorganic halide selected from the group consisting of
5 aluminum bromide, aluminum chloride, aluminum iodide, antimony pentachloride, antimony trichloride, boron tribromide, boron trichloride, ferric chloride, gallium trichloride, molybdenum pentachloride, phosphorus tribromide, phosphorus pentachloride, stannic chloride,
10 titanium tetrachloride, titanium tetraiodide, and tungsten hexachloride.

15. A syringe as specified in claim 3 wherein the atomic ratio of the halide ion to the neodymium is within
15 the range of 0.1:1 to 6:1, and wherein the molar ratio of the organoaluminum compound to the organoneodymium compound is within the range of 4:1 to 200:1.

16. A syringe mixing and delivery system comprising a
20 first barrel having an open end and an opposite delivery end defining a delivery passage; a reciprocable stopper sealingly disposed in said first barrel to define a first chamber between said delivery passage and said reciprocable stopper for containing a first constituent in said first chamber; a second barrel that is sized to be disposed in said first barrel and that has an open end and an opposite discharge end defining a discharge passage; a slidable plunger sealingly disposed within said second barrel to define a second chamber between said discharge passage and
25 said slidable plunger for containing a liquid second constituent in said second chamber; and fluid transfer connector means for operatively connecting said second barrel with said reciprocable stopper to permit flow of
30

said liquid second constituent through said stopper from
said second chamber to said first chamber to mix with said
first constituent when said second barrel discharge end and
plunger are moved closer together whereby subsequent
5 movement of said second barrel and reciprocable stopper
together toward said delivery passage of said first barrel
expresses the mixed constituents out of said first chamber
through said delivery passage, wherein said reciprocable
stopper and plunger are comprised of neodymium polyisoprene
10 rubber.

17. A syringe mixing and delivery system as specified
in claim 16, wherein said stopper has ribs.

15 18. A syringe mixing and delivery system as specified
in claim 17, wherein the neodymium polyisoprene rubber is
made with a catalyst system that includes (1) an
organoaluminum compound, (2) an organoneodymium compound,
and (3) at least one compound that contains at least one
20 labile halide ion.